



MEETING SUMMARY OF MEETING THREE

NOTES:

The following pages contain a summary of the presentation and discussions from the WCWCD Community Integrated Resource Planning Advisory Committee Meeting of 29 November 2012.

These pages, together with the presentation slides, constitute the meeting record.

533 E Waterworks Drive
St. George, UT 84770
435-673-3617
wcwcd.org

Committee Members in Attendance

- Barry Barnum, City of St. George
- Larry Blake, Rancher
- Kip Bowler, Banker/Rancher
- Lee Bracken, City of Enterprise
- Dave Clark, Banker
- James Eardley, Washington County
- Murray Gubler, Chamber of Commerce
- Mary Jo Hafen, City of Santa Clara
- Clair Hall, Community Citizen
- Chris Hart, City of Ivins
- Scott Hirschi, Economic Development
- David Isom, Health Care
- Floyd Jackson, Contractor
- Dick Kohler, Architect
- Natalie Larson, Realtor
- Lynn Olds, Toquerville Citizen
- Carol Sapp, Southern Utah Home Builders Association
- Brad Seegmiller, Southern Utah Title Company
- Don Stratton, Vision Dixie
- Darin Thomas, City of Hurricane
- John Wadsworth, Farmer
- Christi Wedig, Citizens for Dixie's Future
- Travis Wilkinson, Small Business
- Karl Wilson, City of LaVerkin

Committee Members Absent or Excused

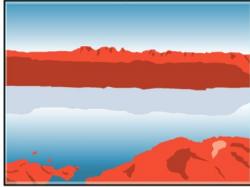
- Paul Clove, Businessman
- Tracy Ence, Development
- Mike Heaton, City of Washington
- Max Rose, Education
- Lawrence Snow, Shivwits Band of Paiute

District/Committee Staff Members in Attendance

- Ed Bowler, Board Chairman
- Ronald Thompson, General Manager
- Barbara Hjelle, Associate General Manager/Counsel
- Corey Cram, Associate General Manager
- Roberta McMullin, Executive Administrator
- Julie Breckenridge, Water Conservation Manager
- Doug Wilson, New Project Development & Information Systems Manager
- Ann Jensen, Publications and Outreach
- Tina Esplin, Legal Secretary
- Brie Thompson, Chemical Engineer
- Judie Brailsford, Public Outreach
- Dr. John Brailsford, Public Meeting Facilitation

Other Attendees

- Todd Adams
- David DeMille
- Matt Millis
- Paul Monroe
- Cheri Reynolds
- Waid Reynolds
- Lisa Rutherford
- Paul Van Dam



Conservation Every Day™

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

MEETING SUMMARY con't

NOTES:

Agenda

1. Welcome and Introductions

John Brailsford welcomed everyone and let them know the committee's participation is appreciated by the Water Conservancy Board and staff. He stressed the importance of their service to the community. John pointed out that responses to questions and comments will either be addressed within the meeting or as the subject comes up on the agenda at a future meeting.

2. Response to questions/comments from October meeting

- **If property taxes were eliminated as revenue for the District, what would it do to the District's bond rating, bond rates, etc?**

Barbara Hjelle said there is a lot of talk as if water is a market commodity rather than it being a fundamental need. She pointed out that, unlike some other public utilities, water is unique as it is an absolute human necessity. Property tax benefits she discussed are as follows:

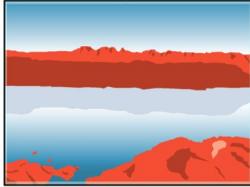
- Water rates reflect actual costs – no "profit"
- Bond rating – reduced borrowing costs
- Property taxes cover services not directly related to water delivery such as:
 - ◊ water conservation, endangered species, watershed protection and management, water right settlements, other federal laws
 - ◊ assistance to other water suppliers
 - ◊ O&M costs allocable to future users

- Loss of property tax authority would bring existing contracts into question (RWSA)
- People who work, shop and recreate in communities served by District water supplies may not pay directly for water from the District but still benefit
- Recreational facilities (provide sales tax and other economic benefits)
- Reduced water use reduces landscape benefits: provide shade, absorb carbon dioxide, supply oxygen, reduce soil erosion, give wildlife a home, decrease energy use, lessen noise pollution, lower air temperatures, reduce storm water run-off...

Because water projects must be built at full capacity, the first customer cannot possibly pay for the project making it necessary for the project to be set up to be paid over time. And, if property tax was taken away and water paid by user fees only, costs would go up significantly across the board except for raw land that uses no water. Hospitals, churches and public institutions, not currently taxed, would have an increase of about 165%.

	Market Value	WCD Tax	Billings	Total	165% Increase	% Change
Residential						
1,490 sf	\$ 100,000	\$ 67	\$ 493	560	1,308	+133
4,434 sf	500,000	295	502	798	1,332	+67
Commercial						
Motel	5,343,000	5,306	15,042	20,348	39,862	+96
Restaurant	1,291,982	1,283	4,196	5,478	11,118	+103
Shopping Center	22,538,100	22,380	17,430	39,810	46,189	+16
Non-taxed						
Hospital			57,620	57,620	152,693	+165
Church			3,778	3,778	10,013	+165
Raw Land						
5 Acres	544,500	541		541	0	-100
42 Acres	3,362,400	3,339		3,339	0	-100

533 E Waterworks Drive
St. George, UT 84770
435-673-3617
wcwcd.org



WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

MEETING SUMMARY con't

NOTES:

Scott Hirschi said John Crandall at the October meeting made a statement that bond rates are positively affected by having stable revenues supported by property taxes. Scott mentioned he was not sure he recognized the difference between stable revenue created by water sales or property taxes because the buyer of the bond is looking for a reliable source for the bonds. Barbara said as you reduce the number of revenue sources you are weakened generally and numerous sources create a more stable portfolio.

The other consideration is that each one of these factors varies in different economic conditions. Impact fees go up and down and collection of water fees goes up and down because people need more water in a hot, dry year. Every one of these components cycle in a different way and the diversity of revenue creates a balance that is more attractive. Dave Clark said the reality is the greater the risk the higher the return. With the State of Utah, when they look at a general obligation bond versus a revenue bond, the revenue bond would cost more and you have to make the decision to pay more for the same or finance in another way. Barbara said the assumption that if our retail water rates go up, we conserve more, just hasn't shown to be true. Our research suggests the cost benefit ratio for water conservation to that approach isn't cost effective. If you find a study that goes the other way let us know.

Christi Wedig said her research has shown that increased water price does increase water conservation. She also stated that Dale Gardner, BYU professor, has done a lot of research showing that by using property taxes, you are deferring a cost

and someone will pay it at some point in time and better pricing measures should be in place. Barbara responded that after reading Gardner's book, she found he cites no substantive studies or footnotes on the subject. As far as this issue of deferring costs, at times it is true but it is not true that the property taxes are offsetting user fees in the way suggested. It is going to other purposes such as endangered species.

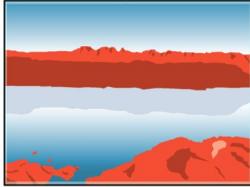
It was requested and agreed by the group that we review all materials and evaluate the data used so we have a method to separate opinion from factual information.

Dave Clark also requested that we look at how we fund water projects now and in the future in even greater detail.

3. Water Resources in Washington County — water cycle and planning for drought

Corey Cram answered a comment from the last meeting about more information on the Gunlock Reservoir/Gunlock wells. The water out of the Gunlock reservoir is used for irrigation by Santa Clara and Ivins, and St. George has 11 wells around the reservoir used for culinary purposes. There are both irrigation and culinary water lines buried in the road below Gunlock to deliver this water resource.

Corey explained the water cycle and its many components, our water sources and how we deal with droughts and plan our water supplies:



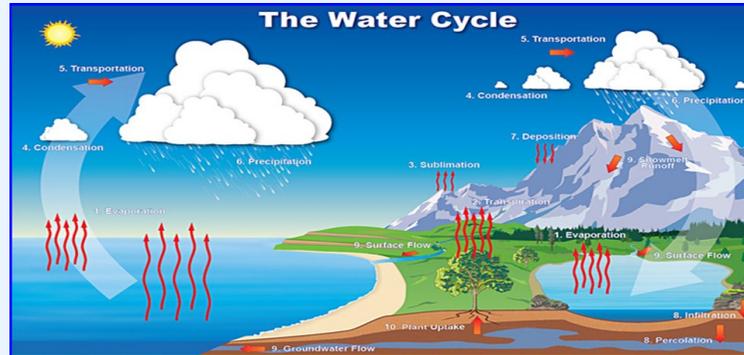
Conservation Every Day™

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

Date: 29 November 2012

MEETING SUMMARY con't

NOTES:



Precipitation:

- Can precipitation be affected?
- Precipitation can either run off or infiltrate into the soil.
- District participates in Utah cloud seeding program.
- The seeding program increases precipitation each year by 15% and covers vast areas.
- Costs are \$2.27/acre foot.
- Snow in mountains much more useful than lower elevation summer rains.

Runoff:

- Controls and dictates how precipitation reports to streams - diversions.
 - ◇ Soil moisture conditions satisfied first.
 - ◇ Snow, sleet, hail, rain - form of precipitation affects runoff.
 - ◇ Time of year precipitation arrives affects runoff.
- Washington County's water outlook always: *'How much snow we receive and how it comes off the mountains'*

Reservoir Storage:

One of the challenges the District has is, if there is a flood in the river, our pipelines have a limited capacity and cannot take in a certain volume of water at one time. Further, the water is dirty, full of debris and we may not want it because of its effects on the reservoirs. There is also a priority water right which requires that the base river flow goes to agriculture. Water is captured in reservoirs generally in late fall, winter and early spring, so we store when it is plentiful to use when it is needed. Yield is the amount of water reporting to the reservoirs which we can expect every single year.

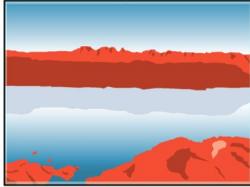
- Quail Creek Reservoir – 40,000 acre feet storage
- Sand Hollow Reservoir – 50,000 acre feet storage
- Quail Creek-Sand Hollow System – 23,000 acre feet annual yield
- Storage - vs - Yield

Surface Water Quality:

An almost greater issue than water quantity is water quality. Water is taken out of the Virgin River above Pah Tempe hot springs because Pah Tempe hot springs provides 'toasty' hot water and the dissolved mineral content limits the water use for both potential culinary and also irrigation purposes.

Groundwater Aquifers, Quantity and Quality:

Corey explained the Navajo Sandstone, Springdale Sandstone and Shinarump Conglomerate Aquifers and explained that aquifers are rock formations which are capable of both storing and transmitting water. Challenges presented are the rock for-



WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

MEETING SUMMARY con't

NOTES:

mations adjacent to some of the aquifers, particularly the Shinarump Conglomerate, have minerals and salts that can cause water quality problems.

Sand Hollow Managed Aquifer Recharge:

Corey discussed the Sand Hollow managed aquifer recharge project where the surface reservoir holds 50,000 acre feet and covers 1,300 acres. It has recharged approximately 100,000 acre feet of water into the aquifer since 2002 and is capable of storing up to 300,000 acre feet.

Water Quality Challenges:

- Virgin River conditions
 - ◊ Total dissolved solids
 - ◊ Boron
 - ◊ Taste/odor
- Groundwater
 - ◊ Arsenic
 - * 50 parts per billion (old rule)
 - * 10 parts per billion (new rule)
- Secondary Water Systems

Other Local, State and Federal Demands for Water:

- Instream flow requirements
- Recreation
- Federal and State Drinking Water Requirements
- Water Source Protection Plans
- Water Rights Settlements
- Endangered Species Mitigation
- Wildlife Conservation Plans

Reuse and Secondary Water Use:

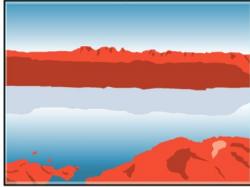
- Golf courses
- Cemeteries
- Parks
- Churches
- Most schools and Dixie College
- Irrigation

Barry Barnum pointed out that cemeteries, all agricultural land along the Santa Clara River, most parks, most schools, a lot of churches, Dixie College, and all but one golf course are using reuse or secondary water that is not fit for human consumption and cannot readily be converted to drinking water. John Wadsworth said the Virgin River and its tributaries are the best assets this county has.

—COMMITTEE BREAK—

4. How Virgin River water yields are modeled

John Brailsford introduced Todd Adams, Assistant Director over the planning branch of the Utah Division of Water Resources and thanked him for meeting with our group. Todd explained the Division has legislative authority to protect Utah's rights to interstate streams, provide comprehensive water planning, manage Utah's water resource construction programs, to research, evaluate and oversee Utah's cloud seeding program and oversee the Water Conservation Plan Act. In the last 20, years, the Division has developed state water plans and river basin plans throughout the state and has done special studies on water conservation, water reuse, conjunctive management,



Conservation Every Day™

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

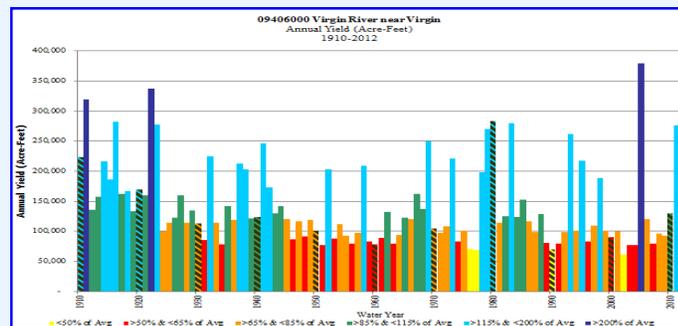
MEETING SUMMARY con't

NOTES:

drought, sedimentation in reservoirs, residential water use, municipal and industrial water use, cost of water, water and energy and cloud seeding.

Todd pointed out that cloud seeding cannot chase storms to bring immediate relief during droughts, but needs to run over a long period of time to gradually and consistently help bring reservoirs and soil moisture up. The lower Colorado River basin states also help fund cloud seeding because they believe it will help them get extra water downstream.

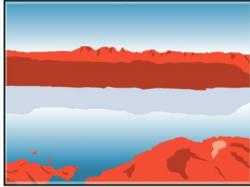
Here, on the Virgin River, we look at stream gages operated by United States Geological Survey (USGS), a scientific agency of the federal government, to model the Virgin River water yields. The USGS has collected information from 1910 to 2012, with a few years missing, so we have a complete period of record. The gages collect the information on 15 minute intervals and from that they create an average daily value that we use in our modeling component. We take that information and model to help make decisions all the way down the river such as how pipe size is determined, what capacities are and when water can be taken diverted from the river.



Accurate representation of the Virgin River in the model requires input of the demands of Hurricane, LaVerkin and Washington Fields irrigation systems, and then we adjust the St. George municipal area based on water flows. Sometimes we don't have enough water and we adjust that demand. We have minimum flow requirements below the Quail Creek diversion, fish flows above the Washington Fields diversion and different inputs into the Virgin River. The Water District and our engineers work together in looking at this model for hydro power, water yields and those types of components. When we have a high river flow of over 1,000 cubic feet per second (cfs), the model assumes it is very sediment laden and not suitable for use. The model uses different distribution curves for different areas on different demand patterns. We have an irrigation pattern for Hurricane and LaVerkin, one for municipal and industrial (which uses more water outdoors and less indoors), and one for the Washington Fields diversion which is a year round diversion.

Scott Hirschi asked if the minimum flow is 86 cfs at the diversion and if the District guarantees that flow? Ron said the District does not guarantee that flow rate at the Washington Fields diversion. The water right at Washington Fields is 86 cfs or the natural discharge near Virgin, but we don't divert into Quail Creek and Sand Hollow until Washington Fields diversion water right is satisfied. During a dry year, the only water we deliver is the 1890 water right to the Washington Fields.

533 E Waterworks Drive
St. George, UT 84770
435-673-3617
wcwd.org

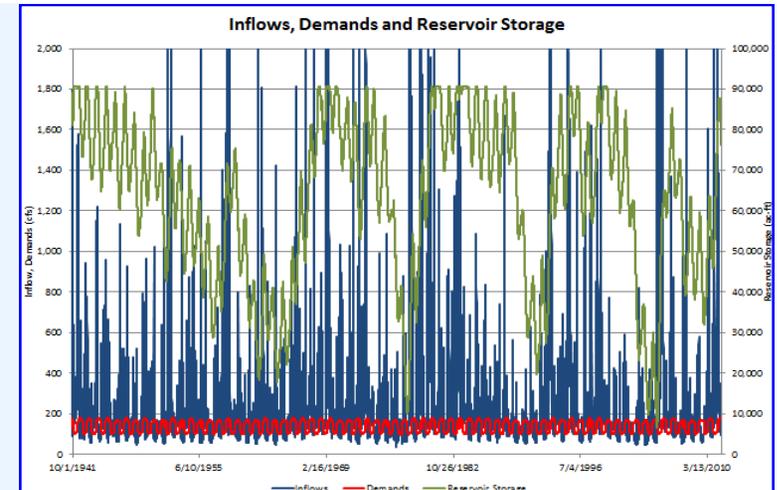
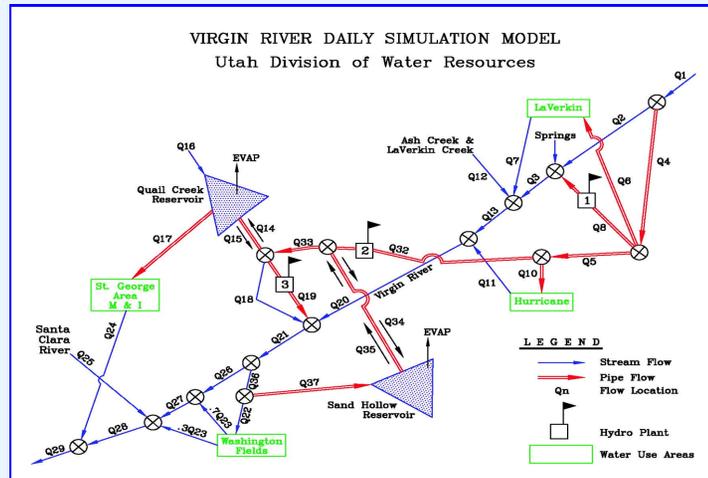


Conservation Every Day™

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

MEETING SUMMARY con't

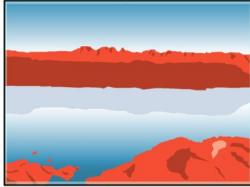
NOTES:



Todd demonstrated the Virgin River water inflows, demands and reservoir storage from 1941 until 2010. He said as the system operates today at full utilization, a 10% shortage in the worst year has to be made up somehow. He stressed that when you start conserving more and become more restrictive in the water you use, you are going to harden your water supply and have less outdoor water to turn off in a dry year in order to immediately shift water use from outside watering to water available for personal human indoor use. When you have large demands on the system, reservoirs cannot keep up with that demand and reservoir storage decreases as happened in 2004. The reservoirs regularly fill and go down, and the Virgin River water system is heavily dependent on precipitation and reservoir storage. The Water District has now developed the Sand Hollow aquifer recharge and recovery system which is additional storage potentially available from the aquifer system during the worst years.

Todd said if there wasn't climate change, we would be living under Lake Bonneville so, throughout history, there has always been climate change. Climate change and variability has always been an issue to be addressed by water resource managers. The sporadic flows and threats of drought brought on by climate change present major challenges for providing water as the area grows and put challenges on how we model and prepare for these changes. There have been several studies done and the State is waiting for a study coming out by the Bureau of Reclamation on climate change on the Colorado System. Most climate model projections predict the region could see a seven to ten percent reduction in precipitation over time, and some predict up to a 30 percent reduction, so we need to plan for climate change and will need to have modified our Virgin River model to take into account potential changes due to climate change.

533 E Waterworks Drive
 St. George, UT 84770
 435-673-3617
 wccd.org



Conservation Every Day™

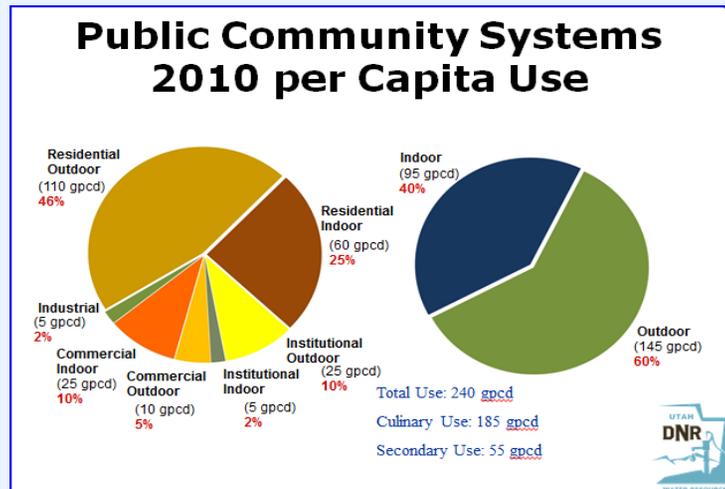
WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

MEETING SUMMARY con't

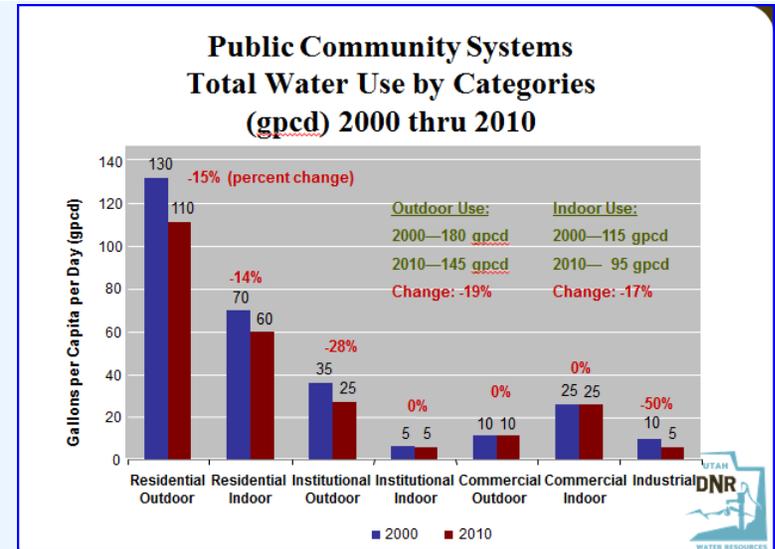
NOTES:

Todd explained that every five years the Division performs a statewide municipal and industrial data collection survey and comes up with the most current information.

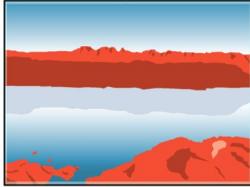
The Division evaluates drinking water, water rights and water resources information from communities through the state to account for all water. From that data, they come up with the per capita use. The statewide total use is around 240 gallons per person per day:



From 2000 to 2010, Utah's per capita water use has gone down 19% in outdoor use and 17% in indoor use, which includes residential, institutional, commercial and industrial. We are getting better with water conservation, especially with new communities because of updated, water-efficient fixtures, retrofit plumbing, etc.



Todd stressed that with per capita water use issues, we really have to be careful with the data we collect in comparing apples to apples and oranges to oranges because there are many variables and there is no universal standard for how to present water use data or what that water use rate is to include. Regarding Utah's per capita water use rate, second homes were not counted in the population totals, we don't track commuters and some numbers include secondary water and unmetered water and some don't. Many people and organizations are getting data from various other places to make comparisons, but communities don't measure and collect their data the same. There are differences in measuring industrial, commercial and institutional demands, climate conditions such as when the rain comes, temperatures, if there are wells and irrigated lots, all those and many other variables.



WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

MEETING SUMMARY con't

NOTES:

Todd said he doesn't believe it is possible to have conservation take water use all the way to zero. There is going to be a finite point where you are going to have to use so much water. You are going to have to flush your toilet so many times and drink so much water, and you all need to decide what you want your communities to look like.

5. Meeting Wrap-Up

The meeting was concluded by thanking CIRPAC for their participation in this process.

6. Public Comments

John Brailsford called for Public Comment

Questions and comments written on cards and on the board to be addressed at future meetings as posted on the agenda:

- Further discussion of financial issues
- Rate of risk to pay back bonds
- Effects of water pricing on conservation
- Review of studies – access to documentation
- Who determines what studies we review?
- Peer review of studies
- Is overwatering due to salts and/or heated water?
- Impacts of soils on watering?
- Use of water rights in Utah
- Comparison of St. George to other southwest communities
- Impact of population on water use – other variables
- Warning of rocks and hard surface may ignore our areas ozone issues that are exacerbated by more vegetation

especially conifer type vegetation (per info at recent "air quality" meetings)

- How do other states provide water without property tax supporting that and still help their water rates reasonable while achieving greater conservation?
- It was asked why CIRPAC cannot be held later in the evening so the working public can attend. Judie Brailsford said the majority of the CIRPAC committee members don't want this meeting to cut into their evenings any later and many have evening meetings and other commitments. We wanted to be sensitive to that, so it was largely based on committee members and their preferences.
- How were CIRPAC members selected and by whom? (See September meeting summary.)
- I did not use significantly more water in the "hot, dry" 2012 summer, so why are numbers (gpcd) so much higher than 2011 and before? What other factors are driving?
- Secondary homes (regarding gpcd) are you saying that Las Vegas and other 'favored' locations don't have a significant number of secondary homes?

Adjourn

The meeting was adjourned at 6:04 p.m.